

**REMARKS**

In the present Amendment, Applicant has amended claims 1, 3, 24, 26, 27, 29, 31, 32, 34, 35, and 38 to more appropriately define the invention. The Amendment is fully supported by the original Specification. Particularly, the Specification teaches that "the ultrasonic wave [has] a single oscillation frequency." For example, "[u]ltrasonic waves of . . . 1.6 MHz are projected . . . to the surface," (page 11, lines 3-5), "[t]he ultrasonic vibration frequency is preferably 0.6 MHz or higher," (page 12, lines 18-19). Upon entry of the Amendment, claims 1-10, 12-18, and 20-42 remain pending, with claims 13-18 and 21-23 withdrawn from consideration as drawn to a non-elected invention.

In the Office Action, the Examiner rejected claims 1-10, 12, 20, and 24-42 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement; rejected claim 42 under 35 U.S.C. § 112, second paragraph, as being indefinite; and rejected claims 1-10, 12, 20, and 24-42 under 35 U.S.C. § 102(e) as being anticipated by Puskas (U. S. Patent No. 6,313,565). Applicant respectfully traverses these rejections.

**I. Rejections Under 35 U.S.C. § 112**

In rejecting claims 1-10, 12, 20, and 24-42 under 35 U.S.C. § 112, first paragraph, the Examiner alleged that the recitation in these claims of "decreasing the vibration of the thing to be washed . . . is not supported by the original disclosure." Office Action, page 2. However, the original Specification clearly describes, for example, "[w]hen ultrasonic waves are further applied to the same place on the structure, the vibration of the structure 14 is amplified . . . and becomes greater (FIGS.

6C and 6D). When the amplitude gets larger, damage is caused by fracture (FIGS. 6E and 6F). . . . [And] the amplified amplitude can be decreased in the time when the ultrasonic pulses are not applied.” Specification, page 14, lines 16-27. Therefore, the rejection of claims 1-10, 12, 20, and 24-42 under 35 U.S.C. § 112, first paragraph, should be withdrawn.

The Examiner also rejected claim 42 under 35 U.S.C. §§ 112, first paragraph and second paragraph, because “the ultrasonic wave is turned on and off by a carrier wave . . . is not supported by the original disclosure,” and that recitation is indefinite. Office Action, page 3. Applicant disagrees with the Examiner for the following reasons.

First, the recitation of “[the] ultrasonic waves . . . are turned on and off” is taught by the original Specification. For example, see the Specification, page 11, lines 20-21. Applicant notes that the Specification also teaches that the ultrasonic wave is turned on and off by a carrier wave, since the ultrasonic wave is driven by superimposing the carrier wave thereunto. See Specification, page 12, line 20 - page 13, line 1. Further, “when raising the frequency of the carrier wave[] decreases the number of pulses of the ultrasonic wave applied continuously in one application, the amplified amplitude can be decreased in the time when the ultrasonic pulses are not applied.” Specification, page 14, lines 22-27. These descriptions, coupled with Figs. 3A-3C, provide clear support for the recitation in claim 42 “that said ultrasonic wave is turned on and off repeatedly by a carrier wave.”

Second, the recitation of “said ultrasonic wave [being] turned on and off repeatedly by a carrier wave” is definite under 35 U.S.C. § 112, second paragraph. As discussed above, the original Specification provides sufficient description of the recitation. Moreover, the recitation is perfectly understood by one skilled in the art, in

view of the fundamental mechanism of amplitude modulation. For example, one may say with clarity “[a] signal being gated (turned on and off) by another signal.” BK Precision, *B&K Precision’s Guidebook to Function Generators*, available at <http://www.bkprecision.com/download/documentation/FGGuide.pdf>.

Applicant respectfully requests the Examiner to withdrawn the rejections of claim 42 under 35 U.S.C. § 112.

In making the references to the specification and drawings set forth above, it is to be understood that Applicant is in no way intending to limit the scope of the claims to the exemplary embodiments shown in the drawings and described in the specification. Rather, Applicant expressly affirms that they are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation and applicable case law.

## II. Rejection Under 35 U.S.C. § 102(e)

The Examiner rejected claims 1-10, 12, 20, and 24-42 under 35 U.S.C. § 102(e) as being anticipated by Puskas.

In order to properly anticipate Applicants’ claimed invention under 35 U.S.C. §102, each and every element of the claim in issue must be found, “either expressly or inherently described, in a single prior art reference.” “The identical invention must be shown in as complete detail as is contained in the . . . claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).” See M.P.E.P. § 2131, 8th ed., 2001.

Claim 1 of the present invention recites, *inter alia*, “applying an ultrasonic wave having a single oscillation frequency to a cleaning fluid in such a manner that said

ultrasonic wave is turned on and off periodically,” (emphasis added). Puskas fails to teach at least this element. In the Office Action, the Examiner referred to col. 6, lines 26-30 of Puskas, alleging that “Puskas teaches the periodical distribution of the quiet times.” Office Action, page 3. It therefore appears that the Examiner considered Puskas’ “intense sound energy” as corresponding to Applicant’s claimed ultrasonic wave. See Puskas, col. 6, lines 26-30. However, as Applicant argued in the Amendment filed on August 29, 2003, and the Amendment filed on January 31, 2003, Puskas teaches “stringing together different frequencies,” Id., col. 3, lines 58-59 (emphasis added), and that the “intense sound energy [is] characterized by [the] series string of different frequencies.” Id., col. 4, lines 42-46 (emphasis added). Clearly, such “intense sound energy” does not have “a single oscillation frequency,” as recited in claim 1. In other words, Puskas does not anticipate “applying an ultrasonic wave having a single oscillation frequency to a cleaning fluid in such a manner that said ultrasonic wave is turned on and off periodically,” as recited in claim 1. Therefore, claim 1 is allowable over Puskas.

Similarly, claims 24 and 29 each recites, *inter alia*, “[an] ultrasonic wave having a single oscillation frequency . . . is turned on and off periodically.” For the same reasons already set forth in the above, claims 24 and 29 are patentable over Puskas.

Regarding the rejection of claims 6, 34, and 38, Applicant submits that each of these claims recites, *inter alia*, “wherein said first ultrasonic wave and said second ultrasonic wave are alternatively applied to the thing, and wherein a frequency of said first ultrasonic wave and a frequency of said second ultrasonic wave are chosen to decrease a vibration.” Puskas fails to teach at least these features. First, contrary to the recitation of Applicant’s claimed invention, Puskas actually requires that “the sound

intensity of these closely related frequencies builds up to a higher valu ” “by stringing together different frequencies from the same frequency range,” Puskas, col. 3, lines 58-61, rather than “to decrease a vibration.” Second, according to Puskas, “FIG. 8B shows a typical staircase sweeping frequency output that can result from this circuitry. If the time at each level 92 is less than the period of the frequency being produced, then the changing frequency will be a different frequency each cycle or each fraction of a cycle. If the time at each level 92 is more than the period of the frequency being produced, then there can be two or more cycles of one frequency before the frequency changes to the next frequency. FIG. 8C shows an example of a random staircase function that can be produced by the circuitry represented in FIG. 8A by inputting random digital numbers into the DAC 90.” Puskas, col. 13, lines 42-52, and Figs. 8A-8C. Clearly, Puskas fails to teach “wherein said first ultrasonic wave and said second ultrasonic wave are alternatively applied to the thing,” as recited in each of claims 6, 34, and 38. Therefore, claims 6, 34, and 38 are patentable over Puskas.

Therefore, Puskas does not anticipate Applicant’s claimed invention in independent claims 1, 6, 24, 29, 34, and 38, and these claims are allowable over Puskas. Claims 2-5, 7-10, 12, 20, 25-28, 30-33, 35-37, and 39-41 are also allowable over Puskas since they each depend from one of claims 1, 6, 24, 29, 34, and 38.

Finally, independent claim 42 recites, *inter alia*, “[an] ultrasonic wave is turned on and off repeatedly by a carrier wave, . . . wherein a duty ratio of the carrier wave is 80% or less.” Puskas does not teach anywhere in its disclosure a “carrier wave” or the duty ratio thereof being 80% or less. Therefore, claim 42 is allowable over Puskas.

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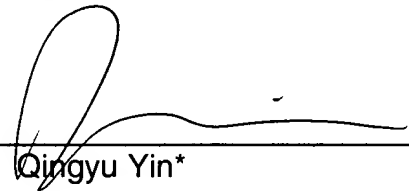
In view of the foregoing remarks, Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims 1-10, 12-18, and 20-42.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: February 3, 2004

By: \_\_\_\_\_  
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\*With limited recognition under 37 C.F.R. § 10.9(b).

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